

SEQUENCE LISTING

<110> Vannuffel, Pascal
Gala, Jean-Luc

<120> GENETIC SEQUENCES, DIAGNOSTIC AND/OR QUANTIFICATION METHODS AND DEVICES
FOR THE IDENTIFICATION OF STAPHYLOCOCCI STRAINS

<130> VANM145.001A

<140> 09/509,234

<141> 1998-09-28

<160> 64

<170> PatentIn version 3.0

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<213> Staphylococcus femA Consensus Sequence

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nccngtnatn gattntnana annnaganc ngtncantnn ttctttaang anttnnnnaa      300
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nngntnnan tngntntan atttannnnn naaaannnna nanganntnn tnaannnnat      540
ggatngntn ngnaannga anacnaaaaa agtnnanaan aatggngtna aagtnnnntt      600
ntnnnnnaa ganganntnc chatnttng ntcattnatg gangatacnn cngannnaa      660
ngntttnnnn gatngngang annnttnta ntanaanngn tnnnnnnatt nnaaagannn      720
ngntntngtn ccntngcnt atatnnantt tgatgantan ntnnnnnga tnnannnga      780
nngnnannnn ntnantaaag annnnaanaa agcnnntaan ganatngana aangncnga      840
naanaaaaaa gcnnnnnaa annnnnnnaa nntnnaaan caantnnng cnaannnaa      900

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aaanntnnan gangnnannn nnttnnaann nnancatggn aangaattac cnatntcngc 960
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 nttnngncan ttngcnggna gntatgcnt ncaatggnnn atgattaant atgcnttnna 1080
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 nganttnntn aaaccnatna anaancnnt ntannnnnnn tatannncan tnaaaaannt 1260
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gat aag atg cca tat agt cat ttc aca caa atg act gaa aac tat gag 96
 Asp Lys Met Pro Tyr Ser His Phe Thr Gln Met Thr Glu Asn Tyr Glu
 20 25 30

atg aaa gtt gca aat aaa aca gaa act cac tta gtt ggt ata aaa aat 144
 Met Lys Val Ala Asn Lys Thr Glu Thr His Leu Val Gly Ile Lys Asn
 35 40 45

aaa gat aat gag gtt att gca gcc tgc atg ttg aca gca gta cca gtc 192
 Lys Asp Asn Glu Val Ile Ala Ala Cys Met Leu Thr Ala Val Pro Val
 50 55 60

atg aaa ttt ttt aag tac ttt tat tct aac cga gga cct gta att. gat 240
 Met Lys Phe Phe Lys Tyr Phe Tyr Ser Asn Arg Gly Pro Val Ile Asp
 65 70 75

tat gat aat aga gag ctt gtt cac ttt ttc ttt aat gag tta aca aag 288
 Tyr Asp Asn Arg Glu Leu Val His Phe Phe Phe Asn Glu Leu Thr Lys
 80 85 90 95

tat tta aaa cag cat aat tgt cta tat gtt cga gtt gac cct tat tta 336
 Tyr Leu Lys Gln His Asn Cys Leu Tyr Val Arg Val Asp Pro Tyr Leu
 100 105 110

cca tat caa tat tta aat cat gat ggt gaa att aca ggt aat gct ggt 384
 Pro Tyr Gln Tyr Leu Asn His Asp Gly Glu Ile Thr Gly Asn Ala Gly
 115 120 125

aat gat tgg ttc ttt gat aag atg aag cat ctc gga ttt gaa cat gaa 432
 Asn Asp Trp Phe Phe Asp Lys Met Lys His Leu Gly Phe Glu His Glu
 130 135 140

ggc ttt act aaa ggt ttt gat ccg att aaa caa atc cga tat cat tct 480
 Gly Phe Thr Lys Gly Phe Asp Pro Ile Lys Gln Ile Arg Tyr His Ser
 145 150 155

gtt tta gat tta aaa aat aaa aca tct aaa gat ata tta aat gga atg 528
 Val Leu Asp Leu Lys Asn Lys Thr Ser Lys Asp Ile Leu Asn Gly Met
 160 165 170 175

gat agt cta cgt aaa cgt aat act aaa aaa gtt caa aaa aat ggt gtg 576
 Asp Ser Leu Arg Lys Arg Asn Thr Lys Lys Val Gln Lys Asn Gly Val
 180 185 190

aaa gtt aag ttc tta tca gaa gaa gaa ctt cca atc ttc cgt tca ttt 624
 Lys Val Lys Phe Leu Ser Glu Glu Glu Leu Pro Ile Phe Arg Ser Phe
 195 200 205

atg gaa gat aca acc gaa acg aaa gaa ttc caa gat aga gat gat agt 672
 Met Glu Asp Thr Thr Glu Thr Lys Glu Phe Gln Asp Arg Asp Asp Ser
 210 215 220

ttc tat tat aat cgc tat aga cat ttc aaa gat cac gtg ctt gta cca 720
 Phe Tyr Tyr Asn Arg Tyr Arg His Phe Lys Asp His Val Leu Val Pro
 225 230 235

cta gct tat att aag ttt gat gag tac atc gaa gaa tta caa aat gaa 768
 Leu Ala Tyr Ile Lys Phe Asp Glu Tyr Ile Glu Glu Leu Gln Asn Glu
 240 245 250 255

cgt gaa act tta aat aaa gat gtt aat aaa gct tta aaa gat att gaa 816
 Arg Glu Thr Leu Asn Lys Asp Val Asn Lys Ala Leu Lys Asp Ile Glu
 260 265 270

aaa cga cca gac aat aaa aag gca ttt aat aaa aaa gaa aat ctt gaa 864

Lys Arg Pro Asp Asn Lys Lys Ala Phe Asn Lys Lys Glu Asn Leu Glu
 275 280 285

aaa caa tta gat gcc aat caa caa aaa tta gac gag gct aaa aaa tta 912
 Lys Gln Leu Asp Ala Asn Gln Gln Lys Leu Asp Glu Ala Lys Lys Leu
 290 295 300

caa gcc gaa cat ggt aat gaa tta cca att tca gca ggt ttc ttc ttt 960
 Gln Ala Glu His Gly Asn Glu Leu Pro Ile Ser Ala Gly Phe Phe Phe
 305 310 315

att aat cca ttt gaa gtt gtt tat tat gca ggt gga act tct aat aaa 1008
 Ile Asn Pro Phe Glu Val Val Tyr Tyr Ala Gly Gly Thr Ser Asn Lys
 320 325 330 335

tat aga cat ttt gca ggc agt tat gct att caa tgg aca atg att aac 1056
 Tyr Arg His Phe Ala Gly Ser Tyr Ala Ile Gln Trp Thr Met Ile Asn
 340 345 350

tat gca att gat cat ggt att gat aga tac aat ttc tat ggt att agc 1104
 Tyr Ala Ile Asp His Gly Ile Asp Arg Tyr Asn Phe Tyr Gly Ile Ser
 355 360 365

ggt aat ttt agt gaa gac gct gaa gat gtt gga gtc att aaa ttt aaa 1152
 Gly Asn Phe Ser Glu Asp Ala Glu Asp Val Gly Val Ile Lys Phe Lys
 370 375 380

aaa ggt ttc aat gca gac gta att gag tat gtt gga gac ttt gtg aaa 1200
 Lys Gly Phe Asn Ala Asp Val Ile Glu Tyr Val Gly Asp Phe Val Lys
 385 390 395

cct att aac aaa cct ttg tat tca gtg tat aag aca ctc aaa aag att 1248
 Pro Ile Asn Lys Pro Leu Tyr Ser Val Tyr Lys Thr Leu Lys Lys Ile
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gagttaaac 1305

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35 40 45

Asp Asn Glu Val Ile Ala Ala Cys Met Leu Thr Ala Val Pro Val Met
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Lys Phe Phe Lys Tyr Phe Tyr Ser Asn Arg Gly Pro Val Ile Asp Tyr
65 70 75 80

Asp Asn Arg Glu Leu Val His Phe Phe Phe Asn Glu Leu Thr Lys Tyr
85 90 95

Leu Lys Gln His Asn Cys Leu Tyr Val Arg Val Asp Pro Tyr Leu Pro
100 105 110

Tyr Gln Tyr Leu Asn His Asp Gly Glu Ile Thr Gly Asn Ala Gly Asn
115 120 125

Asp Trp Phe Phe Asp Lys Met Lys His Leu Gly Phe Glu His Glu Gly
130 135 140

Phe Thr Lys Gly Phe Asp Pro Ile Lys Gln Ile Arg Tyr His Ser Val
145 150 155 160

Leu Asp Leu Lys Asn Lys Thr Ser Lys Asp Ile Leu Asn Gly Met Asp
165 170 175

Ser Leu Arg Lys Arg Asn Thr Lys Lys Val Gln Lys Asn Gly Val Lys
180 185 190

Val Lys Phe Leu Ser Glu Glu Glu Leu Pro Ile Phe Arg Ser Phe Met
195 200 205

Glu Asp Thr Thr Glu Thr Lys Glu Phe Gln Asp Arg Asp Asp Ser Phe
210 215 220

Tyr Tyr Asn Arg Tyr Arg His Phe Lys Asp His Val Leu Val Pro Leu
225 230 235 240

Ala Tyr Ile Lys Phe Asp Glu Tyr Ile Glu Glu Leu Gln Asn Glu Arg
245 250 255

Glu Thr Leu Asn Lys Asp Val Asn Lys Ala Leu Lys Asp Ile Glu Lys

260

265

270

Arg Pro Asp Asn Lys Lys Ala Phe Asn Lys Lys Glu Asn Leu Glu Lys
 275 280 285

Gln Leu Asp Ala Asn Gln Gln Lys Leu Asp Glu Ala Lys Lys Leu Gln
 290 295 300

Ala Glu His Gly Asn Glu Leu Pro Ile Ser Ala Gly Phe Phe Phe Ile
 305 310 315 320

Asn Pro Phe Glu Val Val Tyr Tyr Ala Gly Gly Thr Ser Asn Lys Tyr
 325 330 335

Arg His Phe Ala Gly Ser Tyr Ala Ile Gln Trp Thr Met Ile Asn Tyr
 340 345 350

Ala Ile Asp His Gly Ile Asp Arg Tyr Asn Phe Tyr Gly Ile Ser Gly
 355 360 365

Asn Phe Ser Glu Asp Ala Glu Asp Val Gly Val Ile Lys Phe Lys Lys
 370 375 380

Gly Phe Asn Ala Asp Val Ile Glu Tyr Val Gly Asp Phe Val Lys Pro
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Lys Arg Phe Asn
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ttt act caa atg aca ggt aac tat aat tta aaa gtt gcc gaa aaa aca 96
 Phe Thr Gln Met Thr Gly Asn Tyr Asn Leu Lys Val Ala Glu Lys Thr
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gaa aca cat tta gtt ggt gtt aaa aat aat aat aac gaa gta att gca 144
 Glu Thr His Leu Val Gly Val Lys Asn Asn Asn Asn Glu Val Ile Ala
 35 40 45

gca tgt tta ttg aca gct gta cca gtc atg aag ttt ttt aaa tac ttt 192
 Ala Cys Leu Leu Thr Ala Val Pro Val Met Lys Phe Phe Lys Tyr Phe
 50 55 60

tac agc aat aga ggc cca gtt ata gat tat gct aac caa gaa ctt gta 240
 Tyr Ser Asn Arg Gly Pro Val Ile Asp Tyr Ala Asn Gln Glu Leu Val
 65 70 75 80

cat ttt ttc ttt aat gag cta act aaa tat tta aaa aag tat aac tgt 288
 His Phe Phe Phe Asn Glu Leu Thr Lys Tyr Leu Lys Lys Tyr Asn Cys
 85 90 95

ctc tat gtc cgc ata gat cca tac tta cct tat caa tat aga gac cat 336
 Leu Tyr Val Arg Ile Asp Pro Tyr Leu Pro Tyr Gln Tyr Arg Asp His
 100 105 110

gac ggt aat ata acg gca aat gct ggc aat gat tgg ttt ttc aat aaa 384
 Asp Gly Asn Ile Thr Ala Asn Ala Gly Asn Asp Trp Phe Phe Asn Lys
 115 120 125

atg gaa caa ctc gga tac cat cat gat ggc ttt aca aca gga ttt gat 432
 Met Glu Gln Leu Gly Tyr His His Asp Gly Phe Thr Thr Gly Phe Asp
 130 135 140

cca ata tta caa atc aga ttc cat tct att ctt aat tta aag gat aag 480
 Pro Ile Leu Gln Ile Arg Phe His Ser Ile Leu Asn Leu Lys Asp Lys
 145 150 155 160

aca gct aaa gat gtt tta aat aat atg gat agt tta cgt aaa aga aat 528
 Thr Ala Lys Asp Val Leu Asn Asn Met Asp Ser Leu Arg Lys Arg Asn
 165 170 175

acc aaa aaa agt tca aaa aat gga gtc aaa gta aag ttc ctt act gaa 576
 Thr Lys Lys Ser Ser Lys Asn Gly Val Lys Val Lys Phe Leu Thr Glu
 180 185 190

gaa gaa cta cct atc ttt cgt tca ttt atg gag cag acg tca gaa tct 624
 Glu Glu Leu Pro Ile Phe Arg Ser Phe Met Glu Gln Thr Ser Glu Ser
 195 200 205

aaa gaa ttc tct gat aga gac gac caa ttt tat tac aat cgg ttt aag 672
 Lys Glu Phe Ser Asp Arg Asp Asp Gln Phe Tyr Tyr Asn Arg Phe Lys
 210 215 220

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 Tyr Tyr Lys Asp Arg Val Leu Val Pro Leu Ala Tyr Leu Lys Phe Asp
 225 230 235 240

gaa tat ata gaa gaa cta acg aat gaa cga caa act tta gaa aaa gat 768

Glu Tyr Ile Glu Glu Leu Thr Asn Glu Arg Gln Thr Leu Glu Lys Asp
 245 250 255

tta ggc aaa gca ctt aaa gac att gag aaa cga cca gat aac aaa aaa 816
 Leu Gly Lys Ala Leu Lys Asp Ile Glu Lys Arg Pro Asp Asn Lys Lys
 260 265 270

gct tat aat aaa cga gac aac cta caa caa caa ctc gat gcc aat caa 864
 Ala Tyr Asn Lys Arg Asp Asn Leu Gln Gln Gln Leu Asp Ala Asn Gln
 275 280 285

caa aag tta aat gag gct aat cag tta caa gcg gaa cac ggt aat gag 912
 Gln Lys Leu Asn Glu Ala Asn Gln Leu Gln Ala Glu His Gly Asn Glu
 290 295 300

tta cct atc tct gcc ggt ttc ttt att att aat ccg ttt gaa gtt gta 960
 Leu Pro Ile Ser Ala Gly Phe Phe Ile Ile Asn Pro Phe Glu Val Val
 305 310 315 320

tac tac gct gga ggt acc gct aat aaa tat cgt cat ttt gca ggt agt 1008
 Tyr Tyr Ala Gly Gly Thr Ala Asn Lys Tyr Arg His Phe Ala Gly Ser
 325 330 335

tac gcg gtt cag tgg act atg att aac tat gct atc gaa cac ggc ata 1056
 Tyr Ala Val Gln Trp Thr Met Ile Asn Tyr Ala Ile Glu His Gly Ile
 340 345 350

gac aga tat aat ttc tac ggc att agt gga aac ttc tca gat gat gct 1104
 Asp Arg Tyr Asn Phe Tyr Gly Ile Ser Gly Asn Phe Ser Asp Asp Ala
 355 360 365

gaa gac gca ggt gtc att cgc ttt aaa aaa ggt tat ggt gca gaa gtg 1152
 Glu Asp Ala Gly Val Ile Arg Phe Lys Lys Gly Tyr Gly Ala Glu Val
 370 375 380

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 Ile Glu Tyr Val Gly Asp Phe Val Lys Pro Ile Asn Lys Pro Met Tyr
 385 390 395 400

aaa ctt tat tca gtg tta aaa cga att caa aat aag cta tag 1242
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<210> 43
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 <213> Staphylococcus lugdunensis femA

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Glu Thr His Leu Val Gly Val Lys Asn Asn Asn Asn Glu Val Ile Ala
35 40 45

Ala Cys Leu Leu Thr Ala Val Pro Val Met Lys Phe Phe Lys Tyr Phe
50 55 60

Tyr Ser Asn Arg Gly Pro Val Ile Asp Tyr Ala Asn Gln Glu Leu Val
65 70 75 80

His Phe Phe Phe Asn Glu Leu Thr Lys Tyr Leu Lys Lys Tyr Asn Cys
85 90 95

Leu Tyr Val Arg Ile Asp Pro Tyr Leu Pro Tyr Gln Tyr Arg Asp His
100 105 110

Asp Gly Asn Ile Thr Ala Asn Ala Gly Asn Asp Trp Phe Phe Asn Lys
115 120 125

Met Glu Gln Leu Gly Tyr His His Asp Gly Phe Thr Thr Gly Phe Asp
130 135 140

Pro Ile Leu Gln Ile Arg Phe His Ser Ile Leu Asn Leu Lys Asp Lys
145 150 155 160

Thr Ala Lys Asp Val Leu Asn Asn Met Asp Ser Leu Arg Lys Arg Asn
165 170 175

Thr Lys Lys Ser Ser Lys Asn Gly Val Lys Val Lys Phe Leu Thr Glu
180 185 190

Glu Glu Leu Pro Ile Phe Arg Ser Phe Met Glu Gln Thr Ser Glu Ser
195 200 205

Lys Glu Phe Ser Asp Arg Asp Asp Gln Phe Tyr Tyr Asn Arg Phe Lys
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Tyr Tyr Lys Asp Arg Val Leu Val Pro Leu Ala Tyr Leu Lys Phe Asp
225 230 235 240

Glu Tyr Ile Glu Glu Leu Thr Asn Glu Arg Gln Thr Leu Glu Lys Asp

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250

255

Leu Gly Lys Ala Leu Lys Asp Ile Glu Lys Arg Pro Asp Asn Lys Lys
260 265 270

Ala Tyr Asn Lys Arg Asp Asn Leu Gln Gln Gln Leu Asp Ala Asn Gln
275 280 285

Gln Lys Leu Asn Glu Ala Asn Gln Leu Gln Ala Glu His Gly Asn Glu
290 295 300

Leu Pro Ile Ser Ala Gly Phe Phe Ile Ile Asn Pro Phe Glu Val Val
305 310 315 320

Tyr Tyr Ala Gly Gly Thr Ala Asn Lys Tyr Arg His Phe Ala Gly Ser
325 330 335

Tyr Ala Val Gln Trp Thr Met Ile Asn Tyr Ala Ile Glu His Gly Ile
340 345 350

Asp Arg Tyr Asn Phe Tyr Gly Ile Ser Gly Asn Phe Ser Asp Asp Ala
355 360 365

Glu Asp Ala Gly Val Ile Arg Phe Lys Lys Gly Tyr Gly Ala Glu Val
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Ile Glu Tyr Val Gly Asp Phe Val Lys Pro Ile Asn Lys Pro Met Tyr
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<221> CDS

<222> (1)..(1245)

<400> 44

acg caa aag agt ttg ggt gca ttt tca gat aaa atg cca aat agc cat
Thr Gln Lys Ser Leu Gly Ala Phe Ser Asp Lys Met Pro Asn Ser His
1 5 10 15

48

ttc acg caa atg gta ggg aat tat gaa ttg aaa att gca gaa agt act 96
 Phe Thr Gln Met Val Gly Asn Tyr Glu Leu Lys Ile Ala Glu Ser Thr
 20 25 30

gaa aca cat tta gta ggt ata aaa aac aat gat aat gaa gtc att gca 144
 Glu Thr His Leu Val Gly Ile Lys Asn Asn Asp Asn Glu Val Ile Ala
 35 40 45

gct tgt tta tta act gca gta cca gta atg aaa ttc ttt aag tat ttt 192
 Ala Cys Leu Leu Thr Ala Val Pro Val Met Lys Phe Phe Lys Tyr Phe
 50 55 60

tat act aat aga ggt ccg gtt ata gat ttt gaa aat aaa gaa tta gtg 240
 Tyr Thr Asn Arg Gly Pro Val Ile Asp Phe Glu Asn Lys Glu Leu Val
 65 70 75 80

cat tac ttt ttc aat gaa cta tct aaa tat gtg aaa aaa cat aat gcg 288
 His Tyr Phe Phe Asn Glu Leu Ser Lys Tyr Val Lys Lys His Asn Ala
 85 90 95

ctt tat tta aga gtt gat cct tat tta gca tat caa tac cgt aat cat 336
 Leu Tyr Leu Arg Val Asp Pro Tyr Leu Ala Tyr Gln Tyr Arg Asn His
 100 105 110

gat ggt gag gta ttg gaa aat gca gga cat gat tgg att ttc gat aaa 384
 Asp Gly Glu Val Leu Glu Asn Ala Gly His Asp Trp Ile Phe Asp Lys
 115 120 125

atg aag cag ctt gga tat aaa cac caa gga ttt tta act ggt ttc gat 432
 Met Lys Gln Leu Gly Tyr Lys His Gln Gly Phe Leu Thr Gly Phe Asp
 130 135 140

tca att att caa att agg ttc cac tct gta ctg gat tta gta ggt aaa 480
 Ser Ile Ile Gln Ile Arg Phe His Ser Val Leu Asp Leu Val Gly Lys
 145 150 155 160

act gct aaa gat gta cta aat ggt atg gat agt tta cgt aaa cgt aat 528
 Thr Ala Lys Asp Val Leu Asn Gly Met Asp Ser Leu Arg Lys Arg Asn
 165 170 175

act aaa aaa gta caa aaa aat ggc gtg aaa gta agg ttc tta agg gaa 576
 Thr Lys Lys Val Gln Lys Asn Gly Val Lys Val Arg Phe Leu Arg Glu
 180 185 190

gat gag ttg cca att ttc cgt tca ttc atg gaa gat aca tct gaa act 624
 Asp Glu Leu Pro Ile Phe Arg Ser Phe Met Glu Asp Thr Ser Glu Thr
 195 200 205

aaa gac ttt gac gat aga gac gat ggc ttt tac tac aat aga tta agg 672
 Lys Asp Phe Asp Asp Arg Asp Asp Gly Phe Tyr Tyr Asn Arg Leu Arg
 210 215 220

tat tat aaa gat cgc gta tta gta cct cta gct tat atg gat ttc aat 720
 Tyr Tyr Lys Asp Arg Val Leu Val Pro Leu Ala Tyr Met Asp Phe Asn
 225 230 235 240

gaa tat att gaa gaa ttg caa gct gaa cgt gag gtg tta agc aaa gat 768

Glu Tyr Ile Glu Glu Leu Gln Ala Glu Arg Glu Val Leu Ser Lys Asp
 245 255
 atc aat aaa gca gta aaa gat atc gag aaa aga cct gaa aat aaa aaa 816
 Ile Asn Lys Ala Val Lys Asp Ile Glu Lys Arg Pro Glu Asn Lys Lys
 260 265 270
 gca tat aat aaa aaa gat aat cta gag aaa caa ctt ata gcg aat caa 864
 Ala Tyr Asn Lys Lys Asp Asn Leu Glu Lys Gln Leu Ile Ala Asn Gln
 275 280 285
 caa aaa att gat gaa gct aaa act cta caa gag aag cat ggt aac gaa 912
 Gln Lys Ile Asp Glu Ala Lys Thr Leu Gln Glu Lys His Gly Asn Glu
 290 295 300
 cta cca atc tca gca gca tat ttc atc att aac cct tat gaa gta gtg 960
 Leu Pro Ile Ser Ala Ala Tyr Phe Ile Ile Asn Pro Tyr Glu Val Val
 305 310 315 320
 tat tat gcg ggt gga acg tca aat gag ttt aga cat ttt gct ggt agt 1008
 Tyr Tyr Ala Gly Gly Thr Ser Asn Glu Phe Arg His Phe Ala Gly Ser
 325 330 335
 tat gcc att caa tgg aag atg att aac tat gct att gac cat aat att 1056
 Tyr Ala Ile Gln Trp Lys Met Ile Asn Tyr Ala Ile Asp His Asn Ile
 340 345 350
 gat aga tat aat ttt tat gga att agt ggt cat ttt aca gaa gat gca 1104
 Asp Arg Tyr Asn Phe Tyr Gly Ile Ser Gly His Phe Thr Glu Asp Ala
 355 360 365
 gaa gat gcc ggt gta gtt aaa ttt aaa aaa gga ttt aat gcg gat gta 1152
 Glu Asp Ala Gly Val Val Lys Phe Lys Lys Gly Phe Asn Ala Asp Val
 370 375 380
 gtg gaa tat gtt ggt gat ttt att aaa cca atc aat aaa cca atg tac 1200
 Val Glu Tyr Val Gly Asp Phe Ile Lys Pro Ile Asn Lys Pro Met Tyr
 385 390 395 400
 aaa att tat acg aca tta aag aaa att aaa gat aaa aag aaa taa 1245
 Lys Ile Tyr Thr Thr Leu Lys Lys Ile Lys Asp Lys Lys Lys
 405 410
 acatttaata gaagggaact aagctagaat gaaatttaca gagttaaacc 1295

<210> 45
 <211> 414
 <212> PRT
 <213> Staphylococcus xylosus femA

<400> 45

Thr Gln Lys Ser Leu Gly Ala Phe Ser Asp Lys Met Pro Asn Ser His
 1 5 10 15

Phe Thr Gln Met Val Gly Asn Tyr Glu Leu Lys Ile Ala Glu Ser Thr
20 25 30

Glu Thr His Leu Val Gly Ile Lys Asn Asn Asp Asn Glu Val Ile Ala
35 40 45

Ala Cys Leu Leu Thr Ala Val Pro Val Met Lys Phe Phe Lys Tyr Phe
50 55 60

Tyr Thr Asn Arg Gly Pro Val Ile Asp Phe Glu Asn Lys Glu Leu Val
65 70 75 80

His Tyr Phe Phe Asn Glu Leu Ser Lys Tyr Val Lys Lys His Asn Ala
85 90 95

Leu Tyr Leu Arg Val Asp Pro Tyr Leu Ala Tyr Gln Tyr Arg Asn His
100 105 110

Asp Gly Glu Val Leu Glu Asn Ala Gly His Asp Trp Ile Phe Asp Lys
115 120 125

Met Lys Gln Leu Gly Tyr Lys His Gln Gly Phe Leu Thr Gly Phe Asp
130 135 140

Ser Ile Ile Gln Ile Arg Phe His Ser Val Leu Asp Leu Val Gly Lys
145 150 155 160

Thr Ala Lys Asp Val Leu Asn Gly Met Asp Ser Leu Arg Lys Arg Asn
165 170 175

Thr Lys Lys Val Gln Lys Asn Gly Val Lys Val Arg Phe Leu Arg Glu
180 185 190

Asp Glu Leu Pro Ile Phe Arg Ser Phe Met Glu Asp Thr Ser Glu Thr
195 200 205

Lys Asp Phe Asp Asp Arg Asp Asp Gly Phe Tyr Tyr Asn Arg Leu Arg
210 215 220

Tyr Tyr Lys Asp Arg Val Leu Val Pro Leu Ala Tyr Met Asp Phe Asn
225 230 235 240

Glu Tyr Ile Glu Glu Leu Gln Ala Glu Arg Glu Val Leu Ser Lys Asp

245

250

255

Ile Asn Lys Ala Val Lys Asp Ile Glu Lys Arg Pro Glu Asn Lys Lys
 260 265 270

Ala Tyr Asn Lys Lys Asp Asn Leu Glu Lys Gln Leu Ile Ala Asn Gln
 275 280 285

Gln Lys Ile Asp Glu Ala Lys Thr Leu Gln Glu Lys His Gly Asn Glu
 290 295 300

Leu Pro Ile Ser Ala Ala Tyr Phe Ile Ile Asn Pro Tyr Glu Val Val
 305 310 315 320

Tyr Tyr Ala Gly Gly Thr Ser Asn Glu Phe Arg His Phe Ala Gly Ser
 325 330 335

Tyr Ala Ile Gln Trp Lys Met Ile Asn Tyr Ala Ile Asp His Asn Ile
 340 345 350

Asp Arg Tyr Asn Phe Tyr Gly Ile Ser Gly His Phe Thr Glu Asp Ala
 355 360 365

Glu Asp Ala Gly Val Val Lys Phe Lys Lys Gly Phe Asn Ala Asp Val
 370 375 380

Val Glu Tyr Val Gly Asp Phe Ile Lys Pro Ile Asn Lys Pro Met Tyr
 385 390 395 400

Lys Ile Tyr Thr Thr Leu Lys Lys Ile Lys Asp Lys Lys Lys
 405 410

<210> 46
 <211> 1283
 <212> DNA
 <213> Staphylococcus capitis femA

<220>
 <221> CDS
 <222> (1)..(1236)

<400> 46
 aca gct aaa gaa ttt agt gac ttt act gat caa atg cct tat agc cat
 Thr Ala Lys Glu Phe Ser Asp Phe Thr Asp Gln Met Pro Tyr Ser His
 1 5 10 15

48

ttt act cag atg gaa ggt aat tat gaa ctt aaa gtt gct gaa ggt acg 96
 Phe Thr Gln Met Glu Gly Asn Tyr Glu Leu Lys Val Ala Glu Gly Thr
 20 25 30

gat tca cat ctc gta gga att aaa aat aat gac aac caa gtg att gca 144
 Asp Ser His Leu Val Gly Ile Lys Asn Asn Asp Asn Gln Val Ile Ala
 35 40 45

gca tgt tta tta act gct gta cct gta atg aaa att ttt aaa tat ttt 192
 Ala Cys Leu Leu Thr Ala Val Pro Val Met Lys Ile Phe Lys Tyr Phe
 50 55 60

tac tca aat cgc ggg cca gtg att gat tat gat aat aaa gag ctt gtt 240
 Tyr Ser Asn Arg Gly Pro Val Ile Asp Tyr Asp Asn Lys Glu Leu Val
 65 70 75 80

cac ttt ttc ttt aat gaa tta agt aaa tat gta aaa aag cat aat tgt 288
 His Phe Phe Phe Asn Glu Leu Ser Lys Tyr Val Lys Lys His Asn Cys
 85 90 95

ctt tat cta aga gtt gac cct tat ctt cct tat caa tac tta aat cat 336
 Leu Tyr Leu Arg Val Asp Pro Tyr Leu Pro Tyr Gln Tyr Leu Asn His
 100 105 110

gac ggt gaa att att gga aat gct ggc cat gat tgg ttt ttc aat aag 384
 Asp Gly Glu Ile Ile Gly Asn Ala Gly His Asp Trp Phe Phe Asn Lys
 115 120 125

atg gaa gaa tta gga ttt gaa cat gaa ggc ttt cat aaa ggc ttc cat 432
 Met Glu Glu Leu Gly Phe Glu His Glu Gly Phe His Lys Gly Phe His
 130 135 140

cct atc tta caa gta aga tat cat tca gtt tta gat tta aaa gat aaa 480
 Pro Ile Leu Gln Val Arg Tyr His Ser Val Leu Asp Leu Lys Asp Lys
 145 150 155 160

acg gct aaa gat gta ctc aaa gga atg gat agt tta aga aag cgt aat 528
 Thr Ala Lys Asp Val Leu Lys Gly Met Asp Ser Leu Arg Lys Arg Asn
 165 170 175

act aag aaa gta caa aaa aat ggt gtc aaa gtc cgt ttc cta tcc gaa 576
 Thr Lys Lys Val Gln Lys Asn Gly Val Lys Val Arg Phe Leu Ser Glu
 180 185 190

gat gaa tta cct atc ttt aga tca ttt atg gaa gat act aca gaa acg 624
 Asp Glu Leu Pro Ile Phe Arg Ser Phe Met Glu Asp Thr Thr Glu Thr
 195 200 205

aaa gag ttc gcc gat aga gat gat agt ttc tat tat aat cga tta aaa 672
 Lys Glu Phe Ala Asp Arg Asp Asp Ser Phe Tyr Tyr Asn Arg Leu Lys
 210 215 220

tac ttt aaa gat aga gta tta gta cca tta gca tat gtt gac ttc gat 720
 Tyr Phe Lys Asp Arg Val Leu Val Pro Leu Ala Tyr Val Asp Phe Asp
 225 230 235 240

gag tat att gaa gaa ctt aat aat gaa aga gat gtt ctt aat aaa gat 768

Glu Tyr Ile Glu Glu Leu Asn Asn Glu Arg Asp Val Leu Asn Lys Asp
 245 250 255
 tta aat aag gcg ctc aaa gat att gag aag aga cct gat aat aag aaa 816
 Leu Asn Lys Ala Leu Lys Asp Ile Glu Lys Arg Pro Asp Asn Lys Lys
 260 265 270
 gct tat aac aaa aga gat aat ctt caa caa caa tta gat gca aat caa 864
 Ala Tyr Asn Lys Arg Asp Asn Leu Gln Gln Gln Leu Asp Ala Asn Gln
 275 280 285
 caa aaa att gat gaa gct aaa aac tta caa caa gaa cat ggt aat gaa 912
 Gln Lys Ile Asp Glu Ala Lys Asn Leu Gln Gln Glu His Gly Asn Glu
 290 295 300
 tta cct att tca gct gga tat ttc ttc att aat ccg ttt gaa gtt gtt 960
 Leu Pro Ile Ser Ala Gly Tyr Phe Phe Ile Asn Pro Phe Glu Val Val
 305 310 315 320
 tat tac gca ggt ggc aca tcg aat cgt tat cgt cac tat gcc gga agt 1008
 Tyr Tyr Ala Gly Gly Thr Ser Asn Arg Tyr Arg His Tyr Ala Gly Ser
 325 330 335
 tat gca att caa tgg aaa atg ata aac tat gct tta gaa cat gga att 1056
 Tyr Ala Ile Gln Trp Lys Met Ile Asn Tyr Ala Leu Glu His Gly Ile
 340 345 350
 aac cgt tat aat ttt tat gga gtt agt ggg gac ttc agt gaa gac gct 1104
 Asn Arg Tyr Asn Phe Tyr Gly Val Ser Gly Asp Phe Ser Glu Asp Ala
 355 360 365
 gaa gat gta gga gta att aag ttc aaa aaa ggc tat aat gct gat gtt 1152
 Glu Asp Val Gly Val Ile Lys Phe Lys Lys Gly Tyr Asn Ala Asp Val
 370 375 380
 att gaa tat gta ggt gat ttt atc aag cca atc aat aaa cct atg tat 1200
 Ile Glu Tyr Val Gly Asp Phe Ile Lys Pro Ile Asn Lys Pro Met Tyr
 385 390 395 400
 gca atc tat aac gca ctt aaa aag tta aag aaa tag atttttttac 1246
 Ala Ile Tyr Asn Ala Leu Lys Lys Leu Lys Lys
 405 410
 caacccaatt atctaattat gaaatttaca gagttaa 1283

<210> 47
 <211> 411
 <212> PRT
 <213> Staphylococcus capitis femA

<400> 47

Thr Ala Lys Glu Phe Ser Asp Phe Thr Asp Gln Met Pro Tyr Ser His
 1 5 10 15

Phe Thr Gln Met Glu Gly Asn Tyr Glu Leu Lys Val Ala Glu Gly Thr
20 25 30

Asp Ser His Leu Val Gly Ile Lys Asn Asn Asp Asn Gln Val Ile Ala
35 40 45

Ala Cys Leu Leu Thr Ala Val Pro Val Met Lys Ile Phe Lys Tyr Phe
50 55 60

Tyr Ser Asn Arg Gly Pro Val Ile Asp Tyr Asp Asn Lys Glu Leu Val
65 70 75 80

His Phe Phe Phe Asn Glu Leu Ser Lys Tyr Val Lys Lys His Asn Cys
85 90 95

Leu Tyr Leu Arg Val Asp Pro Tyr Leu Pro Tyr Gln Tyr Leu Asn His
100 105 110

Asp Gly Glu Ile Ile Gly Asn Ala Gly His Asp Trp Phe Phe Asn Lys
115 120 125

Met Glu Glu Leu Gly Phe Glu His Glu Gly Phe His Lys Gly Phe His
130 135 140

Pro Ile Leu Gln Val Arg Tyr His Ser Val Leu Asp Leu Lys Asp Lys
145 150 155 160

Thr Ala Lys Asp Val Leu Lys Gly Met Asp Ser Leu Arg Lys Arg Asn
165 170 175

Thr Lys Lys Val Gln Lys Asn Gly Val Lys Val Arg Phe Leu Ser Glu
180 185 190

Asp Glu Leu Pro Ile Phe Arg Ser Phe Met Glu Asp Thr Thr Glu Thr
195 200 205

Lys Glu Phe Ala Asp Arg Asp Asp Ser Phe Tyr Tyr Asn Arg Leu Lys
210 215 220

Tyr Phe Lys Asp Arg Val Leu Val Pro Leu Ala Tyr Val Asp Phe Asp
225 230 235 240

Glu Tyr Ile Glu Glu Leu Asn Asn Glu Arg Asp Val Leu Asn Lys Asp

245

250

255

Leu Asn Lys Ala Leu Lys Asp Ile Glu Lys Arg Pro Asp Asn Lys Lys
 260 265 270

Ala Tyr Asn Lys Arg Asp Asn Leu Gln Gln Gln Leu Asp Ala Asn Gln
 275 280 285

Gln Lys Ile Asp Glu Ala Lys Asn Leu Gln Gln Glu His Gly Asn Glu
 290 295 300

Leu Pro Ile Ser Ala Gly Tyr Phe Phe Ile Asn Pro Phe Glu Val Val
 305 310 315 320

Tyr Tyr Ala Gly Gly Thr Ser Asn Arg Tyr Arg His Tyr Ala Gly Ser
 325 330 335

Tyr Ala Ile Gln Trp Lys Met Ile Asn Tyr Ala Leu Glu His Gly Ile
 340 345 350

Asn Arg Tyr Asn Phe Tyr Gly Val Ser Gly Asp Phe Ser Glu Asp Ala
 355 360 365

Glu Asp Val Gly Val Ile Lys Phe Lys Lys Gly Tyr Asn Ala Asp Val
 370 375 380

Ile Glu Tyr Val Gly Asp Phe Ile Lys Pro Ile Asn Lys Pro Met Tyr
 385 390 395 400

Ala Ile Tyr Asn Ala Leu Lys Lys Leu Lys Lys
 405 410

<210> 48

<211> 1297

<212> DNA

<213> Staphylococcus schleiferi femA

<220>

<221> CDS

<222> (1)..(1248)

<400> 48

acg acg gct gaa ttt ggt gcg ttt aca gat caa atg cca tat agc cat
 Thr Thr Ala Glu Phe Gly Ala Phe Thr Asp Gln Met Pro Tyr Ser His
 1 5 10 15

48

ttc acg caa atg gta ggg aac tat gaa tta aag gtt gct gaa ggt gtt 96
 Phe Thr Gln Met Val Gly Asn Tyr Glu Leu Lys Val Ala Glu Gly Val
 20 25 30

gaa aca cat ctt gtc ggc att aaa gat aac aac aat aac gta cta gca 144
 Glu Thr His Leu Val Gly Ile Lys Asp Asn Asn Asn Asn Val Leu Ala
 35 40 45

gca tgt tta ctg aca gca gtg cca gta atg aag ttt ttt aaa tat ttt 192
 Ala Cys Leu Leu Thr Ala Val Pro Val Met Lys Phe Phe Lys Tyr Phe
 50 55 60

tat tca aac cgc gga cca gtc atg gac tac gaa aat aaa gag ctc gtt 240
 Tyr Ser Asn Arg Gly Pro Val Met Asp Tyr Glu Asn Lys Glu Leu Val
 65 70 75 80

cat ttc ttt ttt aat gaa ctt tca aaa tat gtt aag aaa tat cac gca 288
 His Phe Phe Phe Asn Glu Leu Ser Lys Tyr Val Lys Lys Tyr His Ala
 85 90 95

ttg tat ttg aga gta gac cct tat tta cca atg tta aag cga aac cat 336
 Leu Tyr Leu Arg Val Asp Pro Tyr Leu Pro Met Leu Lys Arg Asn His
 100 105 110

gat ggt gaa gtg att gaa aga tac ggc agt gac tgg ttt ttt gat aaa 384
 Asp Gly Glu Val Ile Glu Arg Tyr Gly Ser Asp Trp Phe Phe Asp Lys
 115 120 125

atg gct gaa tta aac ttt gaa cat gaa ggt ttc aca act ggg ttt gat 432
 Met Ala Glu Leu Asn Phe Glu His Glu Gly Phe Thr Thr Gly Phe Asp
 130 135 140

aca ata agg caa att cgt ttt cat tct gtg ctc gat gtt gaa aat aaa 480
 Thr Ile Arg Gln Ile Arg Phe His Ser Val Leu Asp Val Glu Asn Lys
 145 150 155 160

aca tca aaa gac atc tta aat caa atg gat aat tta agg aaa aga aat 528
 Thr Ser Lys Asp Ile Leu Asn Gln Met Asp Asn Leu Arg Lys Arg Asn
 165 170 175

acg aaa aaa gta cag aaa aat ggt gtg aaa gtc cgc tat cta aac gaa 576
 Thr Lys Lys Val Gln Lys Asn Gly Val Lys Val Arg Tyr Leu Asn Glu
 180 185 190

gat gaa tta cat att ttc cgt tcg ttt atg gaa gat aca tct gaa aca 624
 Asp Glu Leu His Ile Phe Arg Ser Phe Met Glu Asp Thr Ser Glu Thr
 195 200 205

aaa gat ttt gta gat aga gat gac gat ttt tat tat cat cgt atg aaa 672
 Lys Asp Phe Val Asp Arg Asp Asp Asp Phe Tyr Tyr His Arg Met Lys
 210 215 220

tac tat aaa gat cgt gtc cgc gta cca cta gcg tat att gat ttt aat 720
 Tyr Tyr Lys Asp Arg Val Arg Val Pro Leu Ala Tyr Ile Asp Phe Asn
 225 230 235 240

gca tat tta gca gag ctc aac act gaa gcg caa gac ttt aaa aaa gaa 768

Ala Tyr Leu Ala Glu Leu Asn Thr Glu Ala Gln Asp Phe Lys Lys Glu
245 250 255

att gca aaa gca gat aaa gac atc gac aag cgt cct gaa aat cag aaa 816
Ile Ala Lys Ala Asp Lys Asp Ile Asp Lys Arg Pro Glu Asn Gln Lys
260 265 270

gcc ata aat aaa aag aaa aat tta gag caa caa cta gaa gcg aat caa 864
Ala Ile Asn Lys Lys Lys Asn Leu Glu Gln Gln Leu Glu Ala Asn Gln
275 280 285

gct aaa ata aaa gaa gca gaa aca ttg caa ctt aaa cac ggt gac aca 912
Ala Lys Ile Lys Glu Ala Glu Thr Leu Gln Leu Lys His Gly Asp Thr
290 295 300

tta ccg att tcg gct gga ttc ttt att att aat cca ttt gag gtt gtt 960
Leu Pro Ile Ser Ala Gly Phe Phe Ile Ile Asn Pro Phe Glu Val Val
305 310 315 320

tat tat gca ggc ggc aca gca aac gaa ttt cgt cat ttt gct gga agc 1008
Tyr Tyr Ala Gly Gly Thr Ala Asn Glu Phe Arg His Phe Ala Gly Ser
325 330 335

tac gca gtg caa tgg gaa atg att aat tat gcg att gat tat caa att 1056
Tyr Ala Val Gln Trp Glu Met Ile Asn Tyr Ala Ile Asp Tyr Gln Ile
340 345 350

cca aga tat aac ttt tat ggc att agt ggt gat ttt tca gaa gat gca 1104
Pro Arg Tyr Asn Phe Tyr Gly Ile Ser Gly Asp Phe Ser Glu Asp Ala
355 360 365

gaa gat gca ggt gtg ata aaa ttt aaa aaa ggc tat aat gca gaa gta 1152
Glu Asp Ala Gly Val Ile Lys Phe Lys Lys Gly Tyr Asn Ala Glu Val
370 375 380

ata gaa tat gtc ggt gat ttt att aag cct ata aac aaa cct gcc tat 1200
Ile Glu Tyr Val Gly Asp Phe Ile Lys Pro Ile Asn Lys Pro Ala Tyr
385 390 395 400

aca gtc tac tta aaa tta aag caa tta aaa gac aag ata aaa aga taa 1248
Thr Val Tyr Leu Lys Leu Lys Gln Leu Lys Asp Lys Ile Lys Arg
405 410 415

gatatagcaa agagaagggg atttattggt atgaaattta cagagttaa 1297

<210> 49
<211> 415
<212> PRT
<213> Staphylococcus schleiferi femA

<400> 49

Thr Thr Ala Glu Phe Gly Ala Phe Thr Asp Gln Met Pro Tyr Ser His
1 5 10 15

Phe Thr Gln Met Val Gly Asn Tyr Glu Leu Lys Val Ala Glu Gly Val
20 25 30

Glu Thr His Leu Val Gly Ile Lys Asp Asn Asn Asn Asn Val Leu Ala
35 40 45

Ala Cys Leu Leu Thr Ala Val Pro Val Met Lys Phe Phe Lys Tyr Phe
50 55 60

Tyr Ser Asn Arg Gly Pro Val Met Asp Tyr Glu Asn Lys Glu Leu Val
65 70 75 80

His Phe Phe Phe Asn Glu Leu Ser Lys Tyr Val Lys Lys Tyr His Ala
85 90 95

Leu Tyr Leu Arg Val Asp Pro Tyr Leu Pro Met Leu Lys Arg Asn His
100 105 110

Asp Gly Glu Val Ile Glu Arg Tyr Gly Ser Asp Trp Phe Phe Asp Lys
115 120 125

Met Ala Glu Leu Asn Phe Glu His Glu Gly Phe Thr Thr Gly Phe Asp
130 135 140

Thr Ile Arg Gln Ile Arg Phe His Ser Val Leu Asp Val Glu Asn Lys
145 150 155 160

Thr Ser Lys Asp Ile Leu Asn Gln Met Asp Asn Leu Arg Lys Arg Asn
165 170 175

Thr Lys Lys Val Gln Lys Asn Gly Val Lys Val Arg Tyr Leu Asn Glu
180 185 190

Asp Glu Leu His Ile Phe Arg Ser Phe Met Glu Asp Thr Ser Glu Thr
195 200 205

Lys Asp Phe Val Asp Arg Asp Asp Asp Phe Tyr Tyr His Arg Met Lys
210 215 220

Tyr Tyr Lys Asp Arg Val Arg Val Pro Leu Ala Tyr Ile Asp Phe Asn
225 230 235 240

Ala Tyr Leu Ala Glu Leu Asn Thr Glu Ala Gln Asp Phe Lys Lys Glu

245

250

255

Ile Ala Lys Ala Asp Lys Asp Ile Asp Lys Arg Pro Glu Asn Gln Lys
260 265 270

Ala Ile Asn Lys Lys Lys Asn Leu Glu Gln Gln Leu Glu Ala Asn Gln
275 280 285

Ala Lys Ile Lys Glu Ala Glu Thr Leu Gln Leu Lys His Gly Asp Thr
290 295 300

Leu Pro Ile Ser Ala Gly Phe Phe Ile Ile Asn Pro Phe Glu Val Val
305 310 315 320

Tyr Tyr Ala Gly Gly Thr Ala Asn Glu Phe Arg His Phe Ala Gly Ser
325 330 335

Tyr Ala Val Gln Trp Glu Met Ile Asn Tyr Ala Ile Asp Tyr Gln Ile
340 345 350

Pro Arg Tyr Asn Phe Tyr Gly Ile Ser Gly Asp Phe Ser Glu Asp Ala
355 360 365

Glu Asp Ala Gly Val Ile Lys Phe Lys Lys Gly Tyr Asn Ala Glu Val
370 375 380

Ile Glu Tyr Val Gly Asp Phe Ile Lys Pro Ile Asn Lys Pro Ala Tyr
385 390 395 400

Thr Val Tyr Leu Lys Leu Lys Gln Leu Lys Asp Lys Ile Lys Arg
405 410 415

<210> 50

<211> 1284

<212> DNA

<213> Staphylococcus sciuri femA

<220>

<221> CDS

<222> (1)..(1233)

<400> 50

aca ctg gaa ttt gaa gct ttt aca aat aaa atg ccg tac gcg cat ttt
Thr Leu Glu Phe Glu Ala Phe Thr Asn Lys Met Pro Tyr Ala His Phe
1 5 10 15

48

aca caa gca gta ggt aat tat gaa tta aaa aca tct gaa ggt act tca 96
 Thr Gln Ala Val Gly Asn Tyr Glu Leu Lys Thr Ser Glu Gly Thr Ser
 20 25 30

aca cat tta gta ggg gtc aaa gat aat caa ggt gaa gta tta gct gcg 144
 Thr His Leu Val Gly Val Lys Asp Asn Gln Gly Glu Val Leu Ala Ala
 35 40 45

tgt ctg tta aca agt gta cca gtt atg aag aaa ttt aat tac ttt tac 192
 Cys Leu Leu Thr Ser Val Pro Val Met Lys Lys Phe Asn Tyr Phe Tyr
 50 55 60

tca aat aga gga cca gta atg gat tat gac aac aaa gaa ctt gtt gac 240
 Ser Asn Arg Gly Pro Val Met Asp Tyr Asp Asn Lys Glu Leu Val Asp
 65 70 75 80

ttt ttc ttt aaa gaa atc gtg agc tat tta aaa agt tat aaa gga tta 288
 Phe Phe Phe Lys Glu Ile Val Ser Tyr Leu Lys Ser Tyr Lys Gly Leu
 85 90 95

ttc ttt aga atc gat cct tac ttg cca tat caa cta aga gat cat gat 336
 Phe Phe Arg Ile Asp Pro Tyr Leu Pro Tyr Gln Leu Arg Asp His Asp
 100 105 110

ggc aat att aaa aaa tca ttc aac cgt gat ggt tta att aaa caa ttt 384
 Gly Asn Ile Lys Lys Ser Phe Asn Arg Asp Gly Leu Ile Lys Gln Phe
 115 120 125

gaa tca tta ggt tat gaa cac caa ggc ttc aca act ggt ttc cac cca 432
 Glu Ser Leu Gly Tyr Glu His Gln Gly Phe Thr Thr Gly Phe His Pro
 130 135 140

ata cat caa att aga tgg cat tct gta ctt gat tta gaa agt atg gac 480
 Ile His Gln Ile Arg Trp His Ser Val Leu Asp Leu Glu Ser Met Asp
 145 150 155 160

gaa aag acg ctc atc aag aac atg gac agt tta aga aaa aga aat act 528
 Glu Lys Thr Leu Ile Lys Asn Met Asp Ser Leu Arg Lys Arg Asn Thr
 165 170 175

aaa aaa gtt caa aaa aat ggt gtt aaa gtt cgt ttt cta tct aaa gat 576
 Lys Lys Val Gln Lys Asn Gly Val Lys Val Arg Phe Leu Ser Lys Asp
 180 185 190

gaa atg ccg ata ttc cgt caa ttt atg gaa gat act aca gag aag aaa 624
 Glu Met Pro Ile Phe Arg Gln Phe Met Glu Asp Thr Thr Glu Lys Lys
 195 200 205

gat ttc aac gat cgt ggc gat gac ttc tat tac aat aga tta aaa tac 672
 Asp Phe Asn Asp Arg Gly Asp Asp Phe Tyr Tyr Asn Arg Leu Lys Tyr
 210 215 220

ttt gaa aat gta aag att cct tta gca tat ata gac ttt gaa act tac 720
 Phe Glu Asn Val Lys Ile Pro Leu Ala Tyr Ile Asp Phe Glu Thr Tyr
 225 230 235 240

att cca caa tta gaa aaa gaa cat gaa caa tac aac aaa gat att gca 768

Ile Pro Gln Leu Glu Lys Glu His Glu Gln Tyr Asn Lys Asp Ile Ala
 245 250 255
 aaa gct gaa aaa gat tta gaa aag aaa'cca gat aat caa aaa acg att 816
 Lys Ala Glu Lys Asp Leu Glu Lys Lys Pro Asp Asn Gln Lys Thr Ile
 260 265 270
 aat aaa ata gac aac tta aaa caa caa aga gaa gca aat gaa gct aaa 864
 Asn Lys Ile Asp Asn Leu Lys Gln Gln Arg Glu Ala Asn Glu Ala Lys
 275 280 285
 tta gaa gaa gca ctt caa cta caa caa gaa cat ggt gat aca tta cca 912
 Leu Glu Glu Ala Leu Gln Leu Gln Gln Glu His Gly Asp Thr Leu Pro
 290 295 300
 ata gca gct ggt ttc ttt att att aat cca ttt gaa gtt gta tat tat 960
 Ile Ala Ala Gly Phe Phe Ile Ile Asn Pro Phe Glu Val Val Tyr Tyr
 305 310 315 320
 gca ggt ggt tca tca aat gaa tat cgt cac ttt gca ggt agt tat gca 1008
 Ala Gly Gly Ser Ser Asn Glu Tyr Arg His Phe Ala Gly Ser Tyr Ala
 325 330 335
 att cag tgg gaa atg att aaa tac gcg tta gat cac aac att gac cgt 1056
 Ile Gln Trp Glu Met Ile Lys Tyr Ala Leu Asp His Asn Ile Asp Arg
 340 345 350
 tat aac ttc tat ggt atc agc gga gac ttc tca gaa gat gca cct gat 1104
 Tyr Asn Phe Tyr Gly Ile Ser Gly Asp Phe Ser Glu Asp Ala Pro Asp
 355 360 365
 gtt ggc gtt att aaa ttt aaa aaa ggt tac aat gca gat gtt tat gaa 1152
 Val Gly Val Ile Lys Phe Lys Lys Gly Tyr Asn Ala Asp Val Tyr Glu
 370 375 380
 tat att ggt gat ttc gtt aaa cca att aat aaa cca gcg tac aaa gca 1200
 Tyr Ile Gly Asp Phe Val Lys Pro Ile Asn Lys Pro Ala Tyr Lys Ala
 385 390 395 400
 tat aca aca cta aaa aaa gta tta aaa aaa taa atgattttca gtaagagagg 1253
 Tyr Thr Thr Leu Lys Lys Val Leu Lys Lys
 405 410
 aatttagata atatgaaatt tacagagtta a 1284

<210> 51
 <211> 410
 <212> PRT
 <213> Staphylococcus sciuri femA

<400> 51

Thr Leu Glu Phe Glu Ala Phe Thr Asn Lys Met Pro Tyr Ala His Phe
 1 5 10 15

Thr Gln Ala Val Gly Asn Tyr Glu Leu Lys Thr Ser Glu Gly Thr Ser
20 25 30

Thr His Leu Val Gly Val Lys Asp Asn Gln Gly Glu Val Leu Ala Ala
35 40 45

Cys Leu Leu Thr Ser Val Pro Val Met Lys Lys Phe Asn Tyr Phe Tyr
50 55 60

Ser Asn Arg Gly Pro Val Met Asp Tyr Asp Asn Lys Glu Leu Val Asp
65 70 75 80

Phe Phe Phe Lys Glu Ile Val Ser Tyr Leu Lys Ser Tyr Lys Gly Leu
85 90 95

Phe Phe Arg Ile Asp Pro Tyr Leu Pro Tyr Gln Leu Arg Asp His Asp
100 105 110

Gly Asn Ile Lys Lys Ser Phe Asn Arg Asp Gly Leu Ile Lys Gln Phe
115 120 125

Glu Ser Leu Gly Tyr Glu His Gln Gly Phe Thr Thr Gly Phe His Pro
130 135 140

Ile His Gln Ile Arg Trp His Ser Val Leu Asp Leu Glu Ser Met Asp
145 150 155 160

Glu Lys Thr Leu Ile Lys Asn Met Asp Ser Leu Arg Lys Arg Asn Thr
165 170 175

Lys Lys Val Gln Lys Asn Gly Val Lys Val Arg Phe Leu Ser Lys Asp
180 185 190

Glu Met Pro Ile Phe Arg Gln Phe Met Glu Asp Thr Thr Glu Lys Lys
195 200 205

Asp Phe Asn Asp Arg Gly Asp Asp Phe Tyr Tyr Asn Arg Leu Lys Tyr
210 215 220

Phe Glu Asn Val Lys Ile Pro Leu Ala Tyr Ile Asp Phe Glu Thr Tyr
225 230 235 240

Ile Pro Gln Leu Glu Lys Glu His Glu Gln Tyr Asn Lys Asp Ile Ala

245

250

255

Lys Ala Glu Lys Asp Leu Glu Lys Lys Pro Asp Asn Gln Lys Thr Ile
 260 265 270

Asn Lys Ile Asp Asn Leu Lys Gln Gln Arg Glu Ala Asn Glu Ala Lys
 275 280 285

Leu Glu Glu Ala Leu Gln Leu Gln Gln Glu His Gly Asp Thr Leu Pro
 290 295 300

Ile Ala Ala Gly Phe Phe Ile Ile Asn Pro Phe Glu Val Val Tyr Tyr
 305 310 315 320

Ala Gly Gly Ser Ser Asn Glu Tyr Arg His Phe Ala Gly Ser Tyr Ala
 325 330 335

Ile Gln Trp Glu Met Ile Lys Tyr Ala Leu Asp His Asn Ile Asp Arg
 340 345 350

Tyr Asn Phe Tyr Gly Ile Ser Gly Asp Phe Ser Glu Asp Ala Pro Asp
 355 360 365

Val Gly Val Ile Lys Phe Lys Lys Gly Tyr Asn Ala Asp Val Tyr Glu
 370 375 380

Tyr Ile Gly Asp Phe Val Lys Pro Ile Asn Lys Pro Ala Tyr Lys Ala
 385 390 395 400

Tyr Thr Thr Leu Lys Lys Val Leu Lys Lys
 405 410

<210> 52

<211> 1343

<212> DNA

<213> Staphylococcus hominis femA

<220>

<221> CDS

<222> (64)..(1317)

<400> 52

taaaatttta aaattagtca actcaaatta aataaagatt ctaaattagg agttatagag 60

ata atg aag ttt aca aat tta aca gct aca gaa ttt ggc gat ttt act 108
 Met Lys Phe Thr Asn Leu Thr Ala Thr Glu Phe Gly Asp Phe Thr

1	5	10	15	
gaa aaa atg cca tat agc cat ttt aca cag atg act gaa aat tat gag				156
Glu Lys Met Pro Tyr Ser His Phe Thr Gln Met Thr Glu Asn Tyr Glu				
20		25	30	
tta aaa gtt gct gag aaa act gaa act cat tta gta gga att aaa aat				204
Leu Lys Val Ala Glu Lys Thr Glu Thr His Leu Val Gly Ile Lys Asn				
35		40	45	
aaa gat aat gaa gtc att gct gct tgt atg cta act gct gta ccc gtt				252
Lys Asp Asn Glu Val Ile Ala Ala Cys Met Leu Thr Ala Val Pro Val				
50		55	60	
atg aaa att ttt aaa tat ttt tat tca aat cgt ggt cca gtc att gat				300
Met Lys Ile Phe Lys Tyr Phe Tyr Ser Asn Arg Gly Pro Val Ile Asp				
65		70	75	
tat gaa aac aaa gaa ctc gtt cac ttt ttc ttt aac gaa tta agt aaa				348
Tyr Glu Asn Lys Glu Leu Val His Phe Phe Phe Asn Glu Leu Ser Lys				
80		85	90	95
tat tta aaa caa caa cat tgt tta tat gta cgt ata gac cct tat ttg				396
Tyr Leu Lys Gln Gln His Cys Leu Tyr Val Arg Ile Asp Pro Tyr Leu				
100		105	110	
cct tat caa tat cgt aat cat gat ggt gat att aca gga aat gct ggg				444
Pro Tyr Gln Tyr Arg Asn His Asp Gly Asp Ile Thr Gly Asn Ala Gly				
115		120	125	
aat gat tgg ttc ttc gat aaa atg aaa caa tta gga tat caa cac gaa				492
Asn Asp Trp Phe Phe Asp Lys Met Lys Gln Leu Gly Tyr Gln His Glu				
130		135	140	
ggg ttt aca aca gga ttt gat cca ata tta caa att cgg ttc cat tca				540
Gly Phe Thr Thr Gly Phe Asp Pro Ile Leu Gln Ile Arg Phe His Ser				
145		150	155	
gtt tta aat tta aag gat aaa act gct aaa gat gta tta aat gga atg				588
Val Leu Asn Leu Lys Asp Lys Thr Ala Lys Asp Val Leu Asn Gly Met				
160		165	170	175
gat agt tta cga aaa aga aat act aaa aaa gtc caa aaa aat ggt gtt				636
Asp Ser Leu Arg Lys Arg Asn Thr Lys Lys Val Gln Lys Asn Gly Val				
180		185	190	
aaa gta aga ttt ctt act aaa gaa gaa tta cct att ttc aga tca ttt				684
Lys Val Arg Phe Leu Thr Lys Glu Glu Leu Pro Ile Phe Arg Ser Phe				
195		200	205	
atg gaa gat aca tca gag act aaa gaa ttt tct gat aga gag gat agt				732
Met Glu Asp Thr Ser Glu Thr Lys Glu Phe Ser Asp Arg Glu Asp Ser				
210		215	220	
ttt tac tat aat cga ttt gat cat ttt aaa gat aga gta tta gta cct				780
Phe Tyr Tyr Asn Arg Phe Asp His Phe Lys Asp Arg Val Leu Val Pro				
225		230	235	

ctc gca tat ata aaa ttt gat gaa tat ctt gaa gaa ctt cat gca gaa 828
 Leu Ala Tyr Ile Lys Phe Asp Glu Tyr Leu Glu Glu Leu His Ala Glu
 240 245 250 255
 cgt cag aca tta aat aaa gac tta aac aaa gct cta aaa gat att gaa 876
 Arg Gln Thr Leu Asn Lys Asp Leu Asn Lys Ala Leu Lys Asp Ile Glu
 260 265 270
 aaa cga cca gat aac aaa aaa gca caa aat aaa aaa ata aat tta gaa 924
 Lys Arg Pro Asp Asn Lys Lys Ala Gln Asn Lys Lys Ile Asn Leu Glu
 275 280 285
 cag caa tta aaa gca aat gag caa aaa att gat gaa gca aca caa ctt 972
 Gln Gln Leu Lys Ala Asn Glu Gln Lys Ile Asp Glu Ala Thr Gln Leu
 290 295 300
 caa tta gaa cat ggt aac gaa tta cca ata tct gct gga ttc ttc ttt 1020
 Gln Leu Glu His Gly Asn Glu Leu Pro Ile Ser Ala Gly Phe Phe Phe
 305 310 315
 att aat cca ttt gaa gtt gta tat tat gca ggt gga acg tca aat aaa 1068
 Ile Asn Pro Phe Glu Val Val Tyr Tyr Ala Gly Gly Thr Ser Asn Lys
 320 325 330 335
 tat aga cac ttc gct gga agt tat gca gtt caa tgg act atg att aat 1116
 Tyr Arg His Phe Ala Gly Ser Tyr Ala Val Gln Trp Thr Met Ile Asn
 340 345 350
 tat gca att gat cat ggc att gac cgt tat aat ttt tat ggg att agt 1164
 Tyr Ala Ile Asp His Gly Ile Asp Arg Tyr Asn Phe Tyr Gly Ile Ser
 355 360 365
 ggt cat ttt aca gat gat gct gaa gat gca ggt gtt gta aaa ttt aaa 1212
 Gly His Phe Thr Asp Asp Ala Glu Asp Ala Gly Val Val Lys Phe Lys
 370 375 380
 aaa gga ttt aat gca gat gta att gaa tat gtt ggt gat ttc gtt aaa 1260
 Lys Gly Phe Asn Ala Asp Val Ile Glu Tyr Val Gly Asp Phe Val Lys
 385 390 395
 cct ata aat aaa cca atg tat tca cta tat aca aca ctt aaa aaa att 1308
 Pro Ile Asn Lys Pro Met Tyr Ser Leu Tyr Thr Thr Leu Lys Lys Ile
 400 405 410 415
 aaa aag aga ttgaattaag aggggaatag tgagaa 1343
 Lys Lys Arg

<210> 53
 <211> 418
 <212> PRT
 <213> Staphylococcus hominis.femA
 <400> 53

Met Lys Phe Thr Asn Leu Thr Ala Thr Glu Phe Gly Asp Phe Thr Glu
1 5 10 15

Lys Met Pro Tyr Ser His Phe Thr Gln Met Thr Glu Asn Tyr Glu Leu
20 25 30

Lys Val Ala Glu Lys Thr Glu Thr His Leu Val Gly Ile Lys Asn Lys
35 40 45

Asp Asn Glu Val Ile Ala Ala Cys Met Leu Thr Ala Val Pro Val Met
50 55 60

Lys Ile Phe Lys Tyr Phe Tyr Ser Asn Arg Gly Pro Val Ile Asp Tyr
65 70 75 80

B
Glu Asn Lys Glu Leu Val His Phe Phe Phe Asn Glu Leu Ser Lys Tyr
85 90 95

Leu Lys Gln Gln His Cys Leu Tyr Val Arg Ile Asp Pro Tyr Leu Pro
100 105 110

Tyr Gln Tyr Arg Asn His Asp Gly Asp Ile Thr Gly Asn Ala Gly Asn
115 120 125

Asp Trp Phe Phe Asp Lys Met Lys Gln Leu Gly Tyr Gln His Glu Gly
130 135 140

Phe Thr Thr Gly Phe Asp Pro Ile Leu Gln Ile Arg Phe His Ser Val
145 150 155 160

Leu Asn Leu Lys Asp Lys Thr Ala Lys Asp Val Leu Asn Gly Met Asp
165 170 175

Ser Leu Arg Lys Arg Asn Thr Lys Lys Val Gln Lys Asn Gly Val Lys
180 185 190

Val Arg Phe Leu Thr Lys Glu Glu Leu Pro Ile Phe Arg Ser Phe Met
195 200 205

Glu Asp Thr Ser Glu Thr Lys Glu Phe Ser Asp Arg Glu Asp Ser Phe
210 215 220

Tyr Tyr Asn Arg Phe Asp His Phe Lys Asp Arg Val Leu Val Pro Leu

<221> CDS
 <222> (64)..(1326)

<400> 54
 acttgtttag attagaatta aactcgaaaa tagaactata gataaatagg agtatataaa 60
 aaa atg aaa ttt acg aat tta act gca aaa gag ttc ggt gca ttt acg 108
 Met Lys Phe Thr Asn Leu Thr Ala Lys Glu Phe Gly Ala Phe Thr
 1 5 10 15
 gat aaa atg ccg aat agt cat ttt acg caa atg gtt gga aat tat gaa 156
 Asp Lys Met Pro Asn Ser His Phe Thr Gln Met Val Gly Asn Tyr Glu
 20 25 30
 ttg aaa att gca gaa agt aca gaa aca cac cta gta ggt att aag aat 204
 Leu Lys Ile Ala Glu Ser Thr Glu Thr His Leu Val Gly Ile Lys Asn
 35 40 45
 aat gat aat gaa gta att gca gca tgt tta ctt aca gct gtt cct gtt 252
 Asn Asp Asn Glu Val Ile Ala Ala Cys Leu Leu Thr Ala Val Pro Val
 50 55 60
 atg aaa ttc ttc aag tat ttt tat tcc aat aga ggt cca gtc ata gat 300
 Met Lys Phe Phe Lys Tyr Phe Tyr Ser Asn Arg Gly Pro Val Ile Asp
 65 70 75
 ttt gaa aat aaa gaa ctc gta cat tac ttc ttt aac gaa tta gca aaa 348
 Phe Glu Asn Lys Glu Leu Val His Tyr Phe Phe Asn Glu Leu Ala Lys
 80 85 90 95
 tat gta aaa aaa cat aat gcc tta tat tta cga gta gat cct tat ctt 396
 Tyr Val Lys Lys His Asn Ala Leu Tyr Leu Arg Val Asp Pro Tyr Leu
 100 105 110
 gct tat caa tat cgt aat cat gat ggt gaa gta tta gca aat gcg ggt 444
 Ala Tyr Gln Tyr Arg Asn His Asp Gly Glu Val Leu Ala Asn Ala Gly
 115 120 125
 cac gat tgg att ttt gat aaa atg aaa caa ctc ggt tat aag cat gaa 492
 His Asp Trp Ile Phe Asp Lys Met Lys Gln Leu Gly Tyr Lys His Glu
 130 135 140
 ggt ttt tta act ggc ttt gac cca ata ctt caa ata aga ttc cat tct 540
 Gly Phe Leu Thr Gly Phe Asp Pro Ile Leu Gln Ile Arg Phe His Ser
 145 150 155
 gtt tta gat tta gct gga aaa act gct aaa gac gta ctt aat ggt atg 588
 Val Leu Asp Leu Ala Gly Lys Thr Ala Lys Asp Val Leu Asn Gly Met
 160 165 170 175
 gat agt tta cgt aaa cga aat act aaa aaa gta cag aaa aat ggt gtg 636
 Asp Ser Leu Arg Lys Arg Asn Thr Lys Lys Val Gln Lys Asn Gly Val
 180 185 190
 aaa gta aga ttt tta ggt gaa gat gag ttg cca ata ttc cgc tca ttc 684
 Lys Val Arg Phe Leu Gly Glu Asp Glu Leu Pro Ile Phe Arg Ser Phe
 195 200 205

atg gaa gat act tct gaa aca aag gat ttt gac gat aga gat gac gat 732
 Met Glu Asp Thr Ser Glu Thr Lys Asp Phe Asp Asp Arg Asp Asp Asp
 210 215 220

ttt tat tat aat agg tta aga tat tat aaa gat cgt gtg ctt gtc cca 780
 Phe Tyr Tyr Asn Arg Leu Arg Tyr Tyr Lys Asp Arg Val Leu Val Pro
 225 230 235

tta gct tat atg gat ttt gat gaa tat ata aca gaa tta aag gct gaa 828
 Leu Ala Tyr Met Asp Phe Asp Glu Tyr Ile Thr Glu Leu Lys Ala Glu
 240 245 250 255

cgc gaa gta tta agt aaa gat ata aat aaa gca gtt aag gat ata gaa 876
 Arg Glu Val Leu Ser Lys Asp Ile Asn Lys Ala Val Lys Asp Ile Glu
 260 265 270

B
 aaa aga cca gaa aat aaa aaa gcg tat aat aaa aaa gaa aat tta gaa 924
 Lys Arg Pro Glu Asn Lys Lys Ala Tyr Asn Lys Lys Glu Asn Leu Glu
 275 280 285

caa caa ctg att gca aac caa caa aaa ata gat gaa gcc act gcg tta 972
 Gln Gln Leu Ile Ala Asn Gln Gln Lys Ile Asp Glu Ala Thr Ala Leu
 290 295 300

caa gag aag cat ggt aac gaa tta ccg att tct gca gct tac ttt att 1020
 Gln Glu Lys His Gly Asn Glu Leu Pro Ile Ser Ala Ala Tyr Phe Ile
 305 310 315

att aat cct tat gaa gtc gtt tac tat gca ggt ggt aca tct aat gaa 1068
 Ile Asn Pro Tyr Glu Val Val Tyr Tyr Ala Gly Gly Thr Ser Asn Glu
 320 325 330 335

ttt aga cat ttt gct ggt agt tat gca ata caa tgg aag atg att aat 1116
 Phe Arg His Phe Ala Gly Ser Tyr Ala Ile Gln Trp Lys Met Ile Asn
 340 345 350

tat gct ata gat cat aat ata gat aga tat aat ttt tat ggt att agt 1164
 Tyr Ala Ile Asp His Asn Ile Asp Arg Tyr Asn Phe Tyr Gly Ile Ser
 355 360 365

ggt cat ttt act gaa gat gca gaa gat gca ggt gtt gtt aaa ttt aaa 1212
 Gly His Phe Thr Glu Asp Ala Glu Asp Ala Gly Val Val Lys Phe Lys
 370 375 380

aaa ggt ttt aat gca gat gta gta gaa tat gtt ggt gat ttt att aaa 1260
 Lys Gly Phe Asn Ala Asp Val Val Glu Tyr Val Gly Asp Phe Ile Lys
 385 390 395

ccg att aat aag cca atg tac aaa att tat acg aca ttg aaa aaa att 1308
 Pro Ile Asn Lys Pro Met Tyr Lys Ile Tyr Thr Thr Leu Lys Lys Ile
 400 405 410 415

aag gat aaa aag aaa taa acataaatag aagggaacta agctagaatg 1356
 Lys Asp Lys Lys Lys
 420

aaatttacag agtta

1371

<210> 55
<211> 420
<212> PRT
<213> Staphylococcus saprophyticus femA

<400> 55

Met Lys Phe Thr Asn Leu Thr Ala Lys Glu Phe Gly Ala Phe Thr Asp
1 5 10 15

Lys Met Pro Asn Ser His Phe Thr Gln Met Val Gly Asn Tyr Glu Leu
20 25 30

B1
Lys Ile Ala Glu Ser Thr Glu Thr His Leu Val Gly Ile Lys Asn Asn
35 40 45

Asp Asn Glu Val Ile Ala Ala Cys Leu Leu Thr Ala Val Pro Val Met
50 55 60

Lys Phe Phe Lys Tyr Phe Tyr Ser Asn Arg Gly Pro Val Ile Asp Phe
65 70 75 80

Glu Asn Lys Glu Leu Val His Tyr Phe Phe Asn Glu Leu Ala Lys Tyr
85 90 95

Val Lys Lys His Asn Ala Leu Tyr Leu Arg Val Asp Pro Tyr Leu Ala
100 105 110

Tyr Gln Tyr Arg Asn His Asp Gly Glu Val Leu Ala Asn Ala Gly His
115 120 125

Asp Trp Ile Phe Asp Lys Met Lys Gln Leu Gly Tyr Lys His Glu Gly
130 135 140

Phe Leu Thr Gly Phe Asp Pro Ile Leu Gln Ile Arg Phe His Ser Val
145 150 155 160

Leu Asp Leu Ala Gly Lys Thr Ala Lys Asp Val Leu Asn Gly Met Asp
165 170 175

Ser Leu Arg Lys Arg Asn Thr Lys Lys Val Gln Lys Asn Gly Val Lys
180 185 190

Val Arg Phe Leu Gly Glu Asp Glu Leu Pro Ile Phe Arg Ser Phe Met
195 200 205

Glu Asp Thr Ser Glu Thr Lys Asp Phe Asp Asp Arg Asp Asp Asp Phe
210 215 220

Tyr Tyr Asn Arg Leu Arg Tyr Tyr Lys Asp Arg Val Leu Val Pro Leu
225 230 235 240

Ala Tyr Met Asp Phe Asp Glu Tyr Ile Thr Glu Leu Lys Ala Glu Arg
245 250 255

B1
Glu Val Leu Ser Lys Asp Ile Asn Lys Ala Val Lys Asp Ile Glu Lys
260 265 270

Arg Pro Glu Asn Lys Lys Ala Tyr Asn Lys Lys Glu Asn Leu Glu Gln
275 280 285

Gln Leu Ile Ala Asn Gln Gln Lys Ile Asp Glu Ala Thr Ala Leu Gln
290 295 300

Glu Lys His Gly Asn Glu Leu Pro Ile Ser Ala Ala Tyr Phe Ile Ile
305 310 315 320

Asn Pro Tyr Glu Val Val Tyr Tyr Ala Gly Gly Thr Ser Asn Glu Phe
325 330 335

Arg His Phe Ala Gly Ser Tyr Ala Ile Gln Trp Lys Met Ile Asn Tyr
340 345 350

Ala Ile Asp His Asn Ile Asp Arg Tyr Asn Phe Tyr Gly Ile Ser Gly
355 360 365

His Phe Thr Glu Asp Ala Glu Asp Ala Gly Val Val Lys Phe Lys Lys
370 375 380

Gly Phe Asn Ala Asp Val Val Glu Tyr Val Gly Asp Phe Ile Lys Pro
385 390 395 400

Ile Asn Lys Pro Met Tyr Lys Ile Tyr Thr Thr Leu Lys Lys Ile Lys
405 410 415

Asp Lys Lys Lys
420

<210> 56
<211> 18
<212> DNA
<213> femX1

<220>
<221> misc_feature
<222>
<223> M= A or C

<400> 56
ttcmaatcgc ggtccagt 18

B1
<210> 57
<211> 23
<212> DNA
<213> femX2

<400> 57
caagaacatg gcaacgaatt acc 23

<210> 58
<211> 23
<212> DNA
<213> femX3

<400> 58
tgggtaattc gttgcatgt tct 23

<210> 59
<211> 21
<212> DNA
<213> femX4

<400> 59
ccaagcatct tcagcatctt c 21

<210> 60
<211> 29
<212> DNA
<213> femX5

<400> 60
ttctttaact gttaactctg taaatttca 29

<210> 61
<211> 26
<212> DNA

<213> femX6

<400> 61
acatattttac ttaattcggtt aaagaa

26

<210> 62

<211> 27

<212> DNA

<213> femX7

*Bl
cont*
<400> 62
cagaaaaatg gtgttaaagt aagattt

27

<210> 63

<211> 27

<212> DNA

<213> femX8

<400> 63
aagaaatctt actttcacac cattttt

27

<210> 64

<211> 18

<212> DNA

<213> femX9

<400> 64
aactcgaaaa tagaacta

18